Correspondence

The Editorial Board will be pleased to receive and consider for publication correspondence containing information of interest to physicians or commenting on issues of the day. Letters ordinarily should not exceed 600 words, and must be typewritten, double-spaced and submitted in duplicate (the original typescript and one copy). Authors will be given an opportunity to review any substantial editing or abridgement before publication.

Normotensive Pheochromocytoma

TO THE EDITOR: In the recent article by Kirby and co-workers[1] a case of pheochromocytoma is described in detail and the expanding spectrum of paraneoplastic syndromes associated with this tumor is discussed. Of particular interest in the case was the presence of normotension in a disease usually characterized by hypertension. The authors provide possible pharmacological bases for this phenomenon. They suggest that tissue receptors may become tolerant to catecholamines or that the concomitant production of dopamine and dopa by the tumor may modulate the hypertensive effects of norepinephrine. While I do not disagree with this explanation, I intend to present other potential factors that may account for this phenomenon and possibly other paraneoplastic syndromes associated with this tumor.

One of the richest sources of endogenous opioids (endorphins/enkephalins) is the adrenal medulla, which contains high concentrations of opioid peptides derived from proenkephalin (for enkephalins) and proopiomelanocortin (for endorphin).[2] Opioid peptides are stored in chromaffin cells and are released together with adrenalin during stress. Human pheochromocytomas contain high levels of methionine-enkephalin and leucine-enkephalin immunoreactivity, often several times higher than concentrations reported for normal adrenal medulla.[3] The opioid peptides have hypotensive effects in anesthesized laboratory animals and may play a role in the pathogenesis of shock.[4] The opioid peptides have a variety of other biological effects; these include dopamine-potentiating, analgesic, behavioral, and immunomodulatory properties.[5] It is plausible that some of the paraneoplastic syndromes associated with pheochromocytoma and other neuroendocrine tumors are related to the excess production of these opioid peptides. Plasma levels of endorphins or enkephalins were not reported by Kirby and her associates; however, the measurement of these substances may be important in correlating certain clinical phenomena with the pharmacology of tumors.

ANTHONY J. MURGO, MD
Department of Medicine
West Virgina University Medical Center
Morgantown, West Virginia

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Tick Removal

TO THE EDITOR: The interesting article on ectoparasites by Pien and Grekin[1] stimulated me to share my experience in trying to control ticks and fleas. A simple and safe method of tick removal is to coat the tick with petroleum jelly (such as Vaseline), wait ten minutes and then gently remove the tick with forceps, grasping it very close to the skin of patient or pet. The tick can be removed intact without problems associated with application of strong chemicals or burning. In addition, petroleum jelly based ointments are readily available in most homes.

Fleas have become increasingly troublesome as flea control pet collars have lost effectiveness. DDT powder, recommended by the authors, is not available in the United States. Many people find malathion and pyrethrins unacceptable because of allergenicity. An alternative is 5% carbaryl powder. While there are also objections to carbaryl, it is reasonably effective and inexpensive.

ROBERT A. SHAKMAN, MD, MPH
Ventura, California

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Relation Between Surgical Volume and Postoperative Wound Infection

TO THE EDITOR: In 1981 Farber and co-workers[1] reported that for appendectomy, cholecystectomy and herniorrhaphy the fewer operations done annually in a given institution, the greater the incidence of postoperative wound infection. They concluded that their study "provides additional data clearly demonstrating that morbidity is higher in hospitals performing very little surgery." In discussing these findings, Richards[2] asked whether "the data in this study would have more value if the authors had also compared differences in surgical volume and incidence of wound infections *per physician* and then contrasted these differences with hospital size." Farber and associates[3] agreed "that the data in our

study would have been more meaningful if the infection rate had been given for individual surgeons."

We designed a prospective study to examine the postoperative wound infection rate for one board certified general surgeon (J.M.G.) operating in a 36-bed community hospital in rural Utah (Tooele Valley Hospital) in which fewer than 650 operations are carried out annually. The study group consisted of 135 consecutive patients who underwent emergency appendectomy, emergency or elective biliary tract surgical procedures, or emergency or elective inguinal herniorrhaphy between July 1, 1981, and June 30, 1983. The operative techniques, methods of antisepsis and usage of antibiotic prophylaxis against wound infection were those generally accepted by the surgical community and may be found in any of the current textbooks of surgery.[4,5] All wounds were examined by the surgeon or the hospital's infection control officer (A.B.S.), or both, daily during the hospital stay and approximately weekly thereafter for six weeks after operation. Wound infection was defined as the presence of pus at the incision or drain site.

Of 41 emergency appendectomy operations carried out, there was one postoperative wound infection (incidence, 2.4%). Of 39 biliary tract operations and 55 inguinal hernia repairs, there were no postoperative wound infections. The incidence of postoperative wound infection for the entire group of 135 patients was 0.74%.

Luft and co-workers[6] have also argued for regionalization of surgical procedures; however, they emphasize that "operations are performed and patients are cared for not by hospitals but by surgeons. . . . The poor outcomes in a specific hospital may be the result of the good outcomes of one well qualified surgeon being swamped by the poor outcomes of several 'occasional' surgeons." From the data presented it would seem that individual surgeons, by using standard technique and generally accepted means of preventing postoperative wound infection can achieve good results in a small, rural hospital.

There has been a change recently in the geographic distribution of board certified surgeons toward smaller, more rural communities.[7] This trend can only result in improved surgical care in rural settings. When seeking surgical services, the dictum should be to examine the credentials and record of the individual surgeon and not the size or location of the hospital.

LCDR JON M. GREIF, MC, USNR
Naval Hospital
San Diego
ANNE B. SMITH, B.S.N.
Tooele Valley Hospital
Tooele, Utah

The opinions and assertions contained herein are the personal view of the authors and are not to be construed as official policy of the US Department of the Navy or Department of Defense.

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Rattlesnake Bites

TO THE EDITOR: A dangerous policy is to make an authoritative statement on the basis of a small, retrospective case review, especially when details of hospital progress and outcome are incomplete. Such is the case with Butner's article regarding rattlesnake envenomation in northern California.[1]

If this article had been published as a review of symptomatology and the current therapy recommended by Russell[2] and other noted authorities in the field, the statements would be acceptable. Unfortunately, the author makes a recommendation for antivenin therapy not based on personal clinical experience, but on the treatment rendered by various, probably inexperienced, physicians in many hospitals over 17 years. There is no indication of the patients' length of stay, cost of therapy or outcome except for zero mortality and one case of necrosis.

The problem is that the author has recommended minimal doses of antidote for a serious poisoning. The venom of *Crotalus viridis* (of either the subspecies *oreganus* or *helleri*) is highly toxic, exceeded in LD^{50} only by *Crotalus scutulatus* (Mojave green rattlesnake).[2,3] A second problem is due to the polyvalent antivenin itself. The antibody titer of this product to the proteins of *Crotalus viridis* venom may not be high. The antivenin is produced by immunization of horses with pit viper venoms other than *Crotalus viridis,* then standardized in mice rather than humans. The venom of all US pit vipers varies considerably in protein size and content.[2] The currently available antivenin clinically is not very potent in neutralizing envenomation by northern Pacific rattlesnakes.

We have treated 825 pit viper envenomations at this medical center, 80 in the past three years. Our experience indicates that administration or two or three vials of antivenin would be a disastrously small amount, especially in children. The fact that the patients in the retrospective review survived does not indicate that the treatment was adequate. These patients may have been in hospital or incapacitated for weeks.

Using the vast experience of Dr Findlay Russell, we have devised a simple initial classification and treatment regimen for bites of *Crotalus viridis* species. While a number of factors influence the amount of venom the snake releases during a bite, clinical and laboratory findings appear to be the best basis for grading severity at the time the patient is first seen.

We grade envenomation as follows:

- Minimal: Local swelling
  Paresthesias
  No laboratory changes